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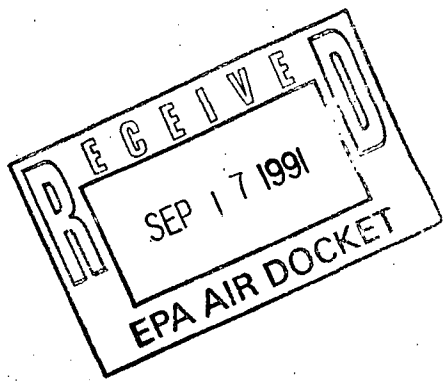
TESTIMONY OF DEWEY MARK

IN SUPPORT OF HITEC 3000

FUEL ADDITIVE WAIVER



Public Docket A-91-46

Air Docket LE 131

Before The

U. S. ENVIRONMENTAL PROTECTION AGENCY
Washington, D.C.
September 12, 1991

My name is Dewey Mark. I have been associated with the petroleum refining industry for over 39 years. Before retiring as President of Diamond Shamrock, Inc., an independent refining and marketing company, I served as Chairman of the National Petroleum Refiners Association in addition to participating in numerous other industry committees and groups. I appeared at this public hearing last year and I am here again to encourage the EPA to grant a waiver for the use of HiTEC 3000 Performance Additive in unleaded gasoline as applied for by Ethyl Corporation on July 12, 1991. It not only is a cost effective octane improvement additive for gasoline, but also provides environmental benefits as well. The use of HiTEC 3000 in gasoline reduces NOx emissions from automobiles, lowers refinery plant emissions and makes it easier to reduce the amount of benzene in gasoline.

Since I appeared at this hearing last year, Congress enacted laws that will drastically affect the cost and composition of future gasoline. Beginning in 1995, refiners will be required to supply "Reformulated Gasoline (RFG)" to the nine metopolitan regions of the country designated as severe ozone nonattainment areas. Some of the specifications for RFG are a minimum oxygen content of 2.0%, maximum benzene content of 1.0% and a requirement for a 15% decrease in volitile organic compounds (VOCs) with "no nitrogen oxides (NOx)" from a 1990 baseline gasoline.

The use of oxygenates can reduce automotive exhaust emissions of carbon monoxide and hydrocarbons to a lesser extent; however, many studies have shown that oxygenates can increase emissions of NOx. This dilemma of an apparent conflict between the requirement for oxygenates and "no NOx increase" in reformulated gasoline (RFG) was a big concern of many interest groups that were part of the recent "Reg Neg" meetings. It appears to me that the use of HiTEC 3000 in RFG would solve this problem. The results of the 48-car fleet test program conducted by Ethyl show that HiTEC 3000 reduced NOx emissions by 20% averaged over 75,000 miles. In a smaller program, conducted recently by Ethyl with fuels containing MTBE and ethanol, similar reductions in NOx were obtained with HiTEC 3000.

HiTEC 3000 Performance Additive may provide additional benefits other than NOx reduction if approved for use in reformulated gasoline. Test results from two separate programs conducted by Ethyl indicate that the use of HiTEC 3000 can reduce the amount of reactive VOCs and toxics emitted from the tailpipe. HiTEC 3000 is completely compatible with the various oxygenates and I believe that HiTEC 3000 would have a positive environmental effect if used in reformulated gasoline.

One of the things that concerns me and must concern all

refiners and marketers is the cost that will be incurred because of the requirements and specifications of producing reformulated gasoline. Any additive, like HiTEC 3000, that can reduce costs and provide environmental benefits, would be most welcome to refiners and marketers. HiTEC 3000, when used at a concentration of approximately 0.03 grams manganese per gallon, will increase the octane quality of a typical unleaded regular by about 0.9 (R+M/2) octane number. And it does this at a cost that is 1/3 the cost of alternative processing.

HiTEC 3000 provides other economic and environmental benefits as well. The octane increase capability of HiTEC 3000 allows the refiner to reduce the severity of operation of the reformer, the chief octane-producing unit in the refinery. This in turn, will reduce the aromatic content of gasoline and assist the refiner in meeting the 1.0% benzene limit for reformulated gasoline. Lowering reformer severity also increases the amount of liquid product and reduces the amount of fuel required to operate the unit which therefore reduces the amount of crude consumed by the industry.

Last year, Turner, Mason and Company conducted a study for Ethyl Corporation that estimated that the use of HiTEC 3000 in gasoline would conserve approximately 82 thousand barrels per day of crude in the U.S. and reduce refinery emissions by about 15 million pounds per year. This study was conducted

before the amendments to the Clean Air Act were passed by Congress. However, Ethyl has recently purchased refinery models from Turner, Mason and Company and preliminary results indicate that there will still be similar savings in crude and refinery emissions if HiTEC 3000 is allowed to be used in unleaded gasoline.

In the near future, refiners are going to be faced with producing three types of gasoline; conventional, oxygenated and reformulated gasoline. Another very important feature of HiTEC 3000 is the flexibility it gives a refiner to meet octane quality and other specifications required for the different types of gasoline. It only requires a small amount (about a teaspoon or less per barrel of gasoline) of HiTEC 3000 to increase the octane quality of a blend of gasoline by up to 0.9 (R+M/2) ON. This flexibility of HiTEC 3000 could allow for a "clean burning" low-octane component, to be used in reformulated gasoline.

As we proceed down the road to produce "cleaner burning" gasoline and are faced with increased costs and investments, we are very much in need of an economic and flexible additive like HiTEC 3000 to assist the refiners in meeting the required goals. Ethyl Corporation has conducted an extensive test program that shows that HiTEC 3000 does significantly reduce tailpipe emissions of NOx, an important contribution in blending reformulated gasoline. In the refining area, its

use offers environmental benefits by conserving crude oil and decreasing refinery emissions. Finally, HiTEC 3000 provides economic advantages, as well as more flexibility, in developing and producing the gasolines of the future.

I, therefore, encourage the EPA to grant approval for the use of HiTEC 3000 in unleaded gasoline. Thank you for your attention.